

EXECUTIVE SUMMERY

PROPOSAL FOR ENHANCEMENT THE PRODUCTION CAPACITY OF EXISTING INDUCTION FURNACE 1X8 TON WITH CCM (UNDER CONSTRUCTION) AND 1 X 25 TPD SLAG CRUSHER TO SET UP 2X10 TON INDUCTION FURNACE AND 280 TPD ROLLING MILL WITHIN ITS EXISTING PLANT

AT VILL: SARPI, P.O. & P.S.- FARIDPUR, DIST: PASCHIM BARDHAMAN, WEST BENGAL

CATEGORY OF PROJECT: B

BASELINE MONITORING PERIOD: OCTOBER TO DECEMBER 2021

LABORATORY USED: KALYANI LABORATORIES PRIVATE LIMITED, BHUBANESWAR

PROJECT PROPOSED BY

M/s. NEPTUNE ISPAT PVT. LIMITED

ENVIRONMENT CONSULTANT:

KALYANI LABORATORIES PVT.LTD.

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NABET CERT. NO: NABET/EIA/2023/SA 0149, valid till 02.03.2023

1 INTRODUCTION

M/s Neptune Ispat Private Limited is located at Village - Sarpi, P.O &P.S. -Faridpur, District – Paschim Bardhaman, West Bengal. The proposed project of the company is for enhancement the production capacity of Existing Induction Furnace 1x8 Ton with CCM (Under construction) and 1 x 25 TPDSlag Crusher. The Company has taken up an expansion project to set up 2x10 Ton Induction Furnace and 280 TPD Rolling Mill within its existing plant. Present capacity of the Plant is 24000 TPA M.S Ingot/ Billets.After expansion the total plant capacity will be M.S. Ingot / Billets 84000 TPA, Rolled Product 80,000 TPA and Slag Crushing 7500 TPA.

2PROJECT DESCRIPTION

As per EIA notification, 2006 and subsequent amendments the proposed enhancement project is listed at Schedule 3(a) under Category-B and require environment clearance from MoEF& CC. Project will be appraised at SEAC, West Bengal. The present EIA/EMP report for the enhancement in production has been prepared based on the approved ToR by SEIAA, Kolkata.The additional installation of induction furnace and the rolling mill will be within the premises of the existing plant. The detail of the existing unit and expansion project is given in **Table No.1** below:

Table No.1 Detail of the existing unit and expansion project

Sl. No	Name of the Unit	Configuration			Capacity	Product
		Existing	Proposed	Final		
1	Induction Furnace (Steel Melting)	1x8 TPH	2x10 TPH	1x8 TPH & 2x10 TPH	84,000 TPA (10 heat/day)	Molten Metal
2	Continuous Caster (for Billet making)	****	2x6/11 m Radius	2x6/11 m Radius	84,000 TPA	MS Billet
3	Rolling Mill	****	80,000 TPA	80,000 TPA	80,000 TPA	TMT Bar
4	Slag Grinding Unit	7500 TPA	****	7500 TPA	7500 TPA	Iron recovery

2.1 Location of the Project

The proposed expansion will be within the existing plant premises located at Village - Sarpi, P.O &P.S. -Faridpur, District – Paschim Bardhaman, West Bengal. The plant site is located in Survey of India Toposheet no. 73 M/6 and bounded by Latitude 23°38'07.9"N and longitude 87°16'27.8"E. The present land use pattern of the area is industrial. Plot area is 6.49 Acres. Nearest highway is NH 19 at a distance of 7.5 km from site. Nearest railway station is Durgapur Railway Station at a distance of 16 km from the site. Nearest river is Ajay river which is 9.5km away from the site. Gangajaghati Forest is at a distance of 27.3 km and Beliator forest is at a distance of 35.3 km from the site.

The overall raw material requirement is given in Table below. The raw materials and finished products will be transported by rail/road.

Table No. 3. Requirement of Raw Material for Proposed Expansion Project

Sl. No.	Name Of TheRaw Materials	Quantity (TPA)	Source	Mode Of Transportation
Steel Melting Shop				
	Name of Raw material	Qty. Required per Ton of production (T)	Total qty Required per annum	Source
1	Sponge Iron	221.80	66,540 TPA	Captive production
2	Pig Iron	91.25	27,375 TPA	Open market
3	Steel Scrap/ Alloys	13.15	3945 TPA	Open market
Rolling Mill				
9	Billet	294	84,000	Captive production

2.2 Land Use Details

The detail land use break up for the plant has been given in **Table No.4** below:

Table No.4 Detail of Land use Breakup

Sl. No.	Type of use	Existing Area (Acres)	Proposed Area (Acres)	Total Area (in acres)
1	Induction Furnace &CCM ,	0.86	1.26	2.12

	Rolling Mill			
2	Storage and Solid waste handling area	0.02	0.04	0.06
3	Administrative office	0.04	--	0.04
4	Road and Paved area	0.6	0.2	0.8
5	Green belt	1.3	0.98	2.28
6	Vacant Land	3.67	1.19	1.19
	Total	6.49		6.49

A detail of the cost of the project is estimated at 25.28 Cr. Both skilled and unskilled labour is available in the nearby areas. The total man power in the existing plant is 35 which will expected to go 75 after the commissioning of expansion project. The power requirement for the proposed expansion production capacity enhancement of would be about 13.5 MVA from DVC and 0.275 MVA from DG Sets is proposed.

Requirement of water after expansion project will be about 74 KLD. However, for the proposed expansion project the water will be sourced from Bore Well. Further additional one RWH pond of same capacity is being proposed for the expansion.

There are two existing stacks present attached to the furnaces and for the enhancement in production another two stacks are proposed which will attach to the new induction furnace.

3 DESCRIPTION OF ENVIRONMENT

The baseline environmental status helps in assessing the present environmental conditions of the project site and its buffer zone (10 Km) & identifying the critical attributes after implementation of the proposed expansion. The baseline study was conducted during the period of October to December, 2021 in the core and buffer zone of the project site **M/s Neptune Ispat Private Limited**. The elevation of the buffer zone varies from 36 to 162 m AMSL.

3.1 Land Environment

As per the land use pattern of the buffer zone of the project site it has been observed that about 23% of the land cover is used as crop land, fallow land is covered by 52% of the total land area, forest cover of the area is only 4% , scrub land is about 2% and land without scrub is 5%. Other

land use pattern of the buffer zone of the project site include river bed 0.01%, water body 2%, settlement 7% and plantation of 2%. Industrial establishment in the study area covers only 1% and quarry site covers 3% of the total land use plan.

3.2 Soil Quality

Soil samples were collected from 4 selected sampling locations in the study area to assess the existing soil quality of the area. The soil has been grouped into major grey and brown loam sedimentary types with loam texture. Soil pH lies in the range of 6.55 – 6.7. Total organic carbon content is moderate to high (0.56 to 0.78%) at most of the places. Macro nutrients like phosphorus (P_2O_5) is moderate (14 to 18 Kg/Ha). Soils are deficient in available nitrogen content (151 to 188 kg/Ha) at most of the sites. Available potassium in soils of this area is high (524 to 591 Kg/Ha). Soil analysis result shows that soils are mostly neutral in reaction; moderately fertile with available phosphorous and available potassium and low in available nitrogen content.

3.3 Air Environment

The normal climate of Paschim Burdwan is dry & hot characterized by hot summer, cold winter, abundant rainfall and humidity. The climate of this area deeply influenced by seasonal winds known as “monsoon”. The South-west monsoon that carries heavy load of moisture in the middle of June and lasts up to September & it is responsible for high rainfall during rainy season. The summer season starts in the month of March to June, however May-June is considered hottest months in the region with high temperature almost up-to 40° C. The month of June to September brings Pre Monsoon rains in the city. The winter season is between December to February. The average wind speed of during the monitoring period is 6.77m/s and predominant wind direction are SE and NE.

3.3.1 Ambient Air Quality

From the air monitoring data it has been observed that, the concentration of PM10 in the project site varies from 63.3–81.5 $\mu\text{g}/\text{m}^3$ and from 80.7.9-51.1 $\mu\text{g}/\text{m}^3$ in the nearby villages. The average value of PM_{2.5} in the project site is 39.6 $\mu\text{g}/\text{m}^3$ and the average of PM_{2.5} varies from 30.3-38.8 $\mu\text{g}/\text{m}^3$ in the surrounding villages. From the ambient air quality monitoring, it is has been found that, the concentration of particulate matter is maximum within the project site and this is mainly due to raw material handling, industrial emission and vehicular movement. The concentration of SO₂ within the project site varies from 6.1-13.8 $\mu\text{g}/\text{m}^3$ and within the nearby villages it ranges

between 5.6-13.7 $\mu\text{g}/\text{m}^3$. The average concentration of NO_x within the project site is 19.3 $\mu\text{g}/\text{m}^3$ and within the villages it ranges from 10.3 -22 $\mu\text{g}/\text{m}^3$. The concentration of air pollutant is higher in the project site and Ukhra village as the area is an industrial estate. From the ambient air quality monitoring it has been found that, the concentrations of the particulate matter, SO_2 and NO_x , are within the NAAQM standard as prescribed by CPCB.

3.4 Water Environment

3.4.1 Surface-Water Quality Monitoring

The water samples are collected from two different sampling locations including upstream and downstream of Damodar River and analyzed for physical, chemical, and biological characteristics as per CPCB guidelines.

The surface water sampling was carried out from Ponds in the villages. From the surface water analysis result it has been found that, pH of the water samples varies from 7.2 to 7.9, D.O varies from 5.6 to 6.1 mg/l, Biochemical oxygen Demand varies from 1.5 to 2 mg/l, Chemical Oxygen Demand varies from 8 to 10, Total hardness varies from 156-244 mg/l and Total Dissolved solid varies from 410 to 540 mg/l. Further the toxic elements like Cd, Pb, As etc. are found to be below detection limit. From the water quality results it can be inferred that all the parameters analyzed are under the prescribed limit as per IS 2296:1982 and as per class C classification of CPCB. The water does not contain any pollutant which would be hazardous for human, animal or crop health.

3.4.2 Ground water quality of the study area

The ground water samples were collected from 4 different sampling stations & analyzed as per IS 10500:2012 to assess the portability of the ground water. **pH:** Ranges from 7.3 to 8.2. The pH of the surface water in the study area is slightly alkaline.

Total Dissolved Solids: Ranges from 350-474 mg/l. This indicates the presence of higher amount of ionic substance in the water.

Total Hardness: Ranges from 48 to 192 mg/l

Iron content: Ranges from 0.15 to 0.5 mg/l.

The samples collected are suitable for drinking purpose with reference to drinking water standard IS: 10500:2012.

3.5 Noise Environment

The study area includes industrial area and residential areas. The ambient noise levels were measured in 8 sampling locations. In the project site the day time noise level is 71.7dB (A) and the night time noise level is 67.9. The maximum noise level is 48dB (A) during the day time at Ukhra village and minimum noise level is 38.3dB (A) during the night time at Purulia village. The noise level is found to be maximum in Ukhra Village.

3.6 Biological Environment

The study of the biological environment includes the composition of flora and fauna of the area and aquatic ecology. The study for assessment of the biological diversity was conducted during the month of January 2021. This is an existing project and the management has not taken up initiative for carrying out plantation. Now the proponent has the planning of developing green belt over an area of 3.0 acre of the area. There are few plantation species present in the road side which includes, *Polyalthia longifolia*, *Dalbergia sisoo*, *Alstoniascholaris*, *Ficus glomerata*, *Cassia siamea*, *Tectona grandis*, *Aalbizialebeck*, *Delonix regia*, *Gmelia arborea*, *Anthocephalus kadamba* etc.

4 ANTICIPATED ENVIRONMENT IMPACT AND MITIGATION MEASURES

This chapter describes the potential environmental impact due to the proposed enhancement in production and installation of additional establishment within the existing premises of M/s Neptune IspatPrivateLimited.

4.1 Impact during Construction Phase

During the construction phase the pollution load will increase due to the installation of additional induction furnace and rolling mill. The impact due to construction phase may include:

1. Increase in dust pollution due to movement of construction equipment and material
2. Increase in dust pollution due to construction work and installation of induction furnace and re-rolling mill within the existing premises.
3. Increase in noise level within the plant premises due to installation of plant and machinery within the project site.
4. Impact on water quality during construction phase may be due to discharge of construction water and domestic waste water discharge from the construction workers.

4.1.1 Mitigation Measures

The impact during the construction phase will be temporary in nature and will end with the construction work and installation of plant and machinery completed. There will be no additional land requirement for the project. The additional plant and machinery installation will be within the existing plant premises. The construction work for additional installation is mostly mechanical fabrication, assembly and erection. So the dust generation due to the installation will be minimal. Water requirement for the construction work is also very less and temporary sanitation facility will be provided for the construction workers

The construction material will be stored in shed to reduce the dust generation. So the overall environmental impact due to construction and installation of additional installation will be minimal and for short term.

4.2 Impact during Operation Phase

The proposed project is for enhancement in production of billet and TMT Bar through additional installation of two nos of 15 Ton capacity of Induction furnace and 1x 500TPD capacity of hot rolling mill. There are two existing stacks present within the plant premises. The source of pollution in the unit is given in **Table No.5** below:

Table No.5 Sources of air pollution inside the existing unit

Sl. No	Major Facilities	Details of Air Pollutants
01	Raw material storage and Handling	Particulate Matter
02	Raw material feeding section	Particulate matter
03	Induction Furnace	Particulate matter and Gaseous emission
05	Casting section	Particulate matter
06	Vehicular Movement	Particulate matter and Gaseous emission
07	Operation of DG Set	Particulate matter and Gaseous emission
08	Rolling Mill	Particulate matter

The additional source of air pollution due to the proposed enhancement in production will be as below:

1. Increase in dust pollution due to additional raw material storage and handling.
2. Increase in particulate matter and gaseous emission due to installation of additional two no. of induction furnaces.
3. Increase in particulate matter emission due to installation of rolling mill.

The results of the air pollution modelling study indicate that the maximum increase of GLC taking into consideration of the existing PM10 concentration and the proposed enhancement in production and increasing pollution load. The maximum ground level concentration will be 4.08 µg/cu.m at a distance of 400m from the project site in SE direction. The GLC predicted at all receptor locations after the proposed expansion are within prescribed limit in NAAQS (National Ambient Air Quality Standard) stipulated by CPCB. The increase in pollution load due to enhancement in production will be managed with taking proper pollution control measures within the plant premises.

4.2.1 Mitigation measures

- Fume extraction system with bag filter to control the emissions from the process and fugitive emissions at furnace has been installed and the same will be installed in the proposed induction furnace.
- All the vehicles used for raw material transportation will be covered by tarpaulin and overloading of the vehicles will be strictly prohibited.
- The raw material is being stored under covered roof and near to the furnace for easy handling of raw material.
- Internal road has been concreted. The internal road of the industrial estate will be properly maintained by the joint collaboration of the industries present within the industrial estate.
- The slag crushing area will be provided with dust extraction system and water sprinklers to minimize the dust load.

4.3 Air pollution Control system installed within the project

Table No.6 Air pollution Control system

Units	Induction Furnace (Existing & Proposed)	Slag Crushing Unit	Rolling Mill (Proposed)
Pollution control equipments installed	Bag Filters and Fume Extractor, Mobile & Fixed type water sprinklers, Dust Catcher	Dust extraction system and Water sprinklers	Dust catcher, Water sprinklers Mobile water sprinklers

4.4 Water Resources & Quality

Total water requirement for the proposed expansion project will be 74 KLD which will be the

makeup water will be sourced from bore well. Existing water requirement for the plant is 23 KLD which is makeup water sourced from bore well. The water requirement is only for cooling purpose of billet and TMT rod. At present the water requirement of the plant is met from the existing borewell within the plant premises. The additional water requirement will also met from the existing bore well. The plant is in the process of obtaining permission for withdrawal of required quantity of water from CGWB.

As the water requirement is only for cooling purpose and water will be kept in closed circuit, there will not be any discharge to the outside area. Hence at present there is no requirement for any Effluent treatment plant. Domestic discharge from canteens and toilets will be channelized through proper sewage channels and soak pits. The cooling tower water will be re-circulated after proper settling and the plant will operate in zero discharge norms.

4.5 Solid waste generation and Management

The Solid waste from Induction Furnace in the form of Slag will be 26 TPD and 0.25 TPD as PCD dust. The Slag will be further processed in house in Slag Crashing Plant for recovery of Scrap Iron.

The Solid Waste after expansion from the Unit will be 26.25 TPD (from Slag Crashing Plant & PCD Dust) which will be used for road making / Low filling and it is also given to outsider who takes it for there low land filling.

4.5.1 Mitigation measures

- Proposal for three tier green belt along the plant boundary with the endemic plant species.
- Increase in avenue plantation along the approach road of the industrial estate.
- Measures to be taken to reduce the pollution level.

4.6 Occupational Health and Safety

4.6.1 Impact during construction and operation phase:

Occupational health problem may arise from worker exposure mainly to dust and heat. Prolonged exposure to noise may also pose as a critical occupational health concern.

- Respiratory diseases due to exposure to dust.
- Noise induced hearing loss
- Heat stress around Induction furnace area, CCM and rolling mill area
- Accident prone areas including, Induction furnace, slag disposal area and casting areas.

- Accident due to movement of internal vehicles and due to machineries.
- Accident due to loading and unloading of heavy weight billets.

4.6.2 Mitigation measures

- Provision of dust extraction system, water sprinklers at all the dust prone area.
- Maintain dust levels within the prescribed standards and regular monitoring to ascertain the dust level within the plant premises.
- All the workers has been provided with PPEs
- Provision of worker camps with proper sanitation and medical facilities, as well as making the worker camps self- sufficient with resources like water supply, sanitation, power supply, etc
- Arrangement of periodic health check-ups for early detection and control of communicable diseases.
- Arrangement to dispose off the wastes at approved waste disposal sites.
- Provide preventive measures for potential fire hazards with requisite fire detection, fire-fighting facilities and adequate water storage.

5 ENVIRONMENTAL MONITORING PROGRAMME

The environmental monitoring programme will be followed by the company to ascertain the implementation of the environmental management plan. The senior management of the company periodically reviews the Environmental management system (EMS) to ensure its suitability and effectiveness. The need for possible changes in the environmental policy and objectives for continuous improvement has been ascertained and revisions made accordingly.

6 ENVIRONMENTAL RISK MANAGEMENT

M/s Neptune Ispat Private has taken up all the safety features during the installation of the existing induction furnace and CCM and with the additional establishment care will be taken to implement all the safety features.

7 PROJECT BENEFITS

Following physical infrastructure facilities will improve due to proposed project.

- Road development and maintenance facilities within and internal road of industrial estate
- Water supply and sanitation

- Support for supply of slag for low land filling and road construction as per the requirement of the nearby villages. Local people will provided with transportation facility
- Support to the local school in terms of education material, different celebration and environment awareness programme among the school children.
- Availability of safe drinking water for the villagers
- Organizing different social and cultural programme at district level
- Development of medical and first aid facility for the workers and local people

The proposed CSR Plan for the Project is given in **Table No.7** below:

Table No7 CSR Plan for the project Table No.8.1 Proposed CSR Plan

Sl. No	Proposed Activities	Location	Proposed Budget in Rs.
Health & Sanitation			
01	Annual Health Check-up Camp	Sarpi	4,00,000.00
02	Provision of RWH & Drainage Facility	Sarpi	6,00,000.00
03	Mobile Medical & Ambulance facility	Near By villages	10,00,000.00
Education			
04	Scholarship to the school children	Sarpi& Near By Villages	2,50,000.00
05	Repair & maintenance of school furniture & Building	Sarpi& Near By Villages	5,50,000.00
Infrastructure Facility			
07	Repair & Maintenance of Connecting Road	1 Km stretch	10,00,000.00
08	Provision of Hand Pump and tube well in the villages	Sarpi& Near By Villages	12,00,000.00

8 ENVIRONMENT MANAGEMENT COST

The annual recurring expenses for implementation of environment management plan will be 4.75 crores.